

Teaching Basic First-Aid Skills against Home Accidents to Children with Autism through Video Modeling

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Abstract

It is known that children with DD can learn first-aid skills and use whenever needed. Applying first-aid skills was taught to three inclusion students with autism through "first-aid skills training package". In the study multiple probe design with probe trials across behaviors was used. The findings indicated that first-aid skills training package was effective and the subjects maintained and generalized their acquired skills to the cuts, abrasions, and minor burns on their own or researcher's different parts of body and to different materials. Social validity data that was collected through social comparison revealed that the subjects could not accomplish these target behaviors before the intervention but their peers with normal development could accomplish these skills at 78% level.

Key Words

Basic First-Aid Skills, Safety Skills, Home Accidents, Video Modeling, Children with Autism.

The longest term objective of the education of individuals with developmental disabilities (DD) is to teach them the skills which are essential for them to live as a part of the society as independent as possible. Individuals with DD have difficulties in giving information to their parents about the negative events that they face and have limitations in judging the dangerous situations and escaping or avoiding these situations (Mazzucchelli, 2001; Mechling, 2008). If those skills are not a part of teaching plans of individuals with DD, safety risks

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may increase in the daily lives of those people (Collins, Wolery, & Gast, 1991; Hoch, Taylor, & Rodriguez, 2009; Mechling; Taber, Alberto, Seltzer, & Hughes, 2003). For this reason, it is very important for individuals with DD to be taught to be aware of safe and unsafe situations via their teaching programs (Mechling).

Safety skills are important for the individuals with DD be independent in the community, live safely in their daily lives, work in jobs safely, and be a part of the community activities (Taber et al., 2003; Timko & Sainato, 1999). Safety skills can be grouped into two groups: skills needed at home and skills needed in the community environments (Bambara, Browder, & Koger, 2006; Zager & Shamow, 2005). Although these skills are very important less than half of the teachers in the United States of America mentioned that they took safety skills as a part of their teaching programs for the individuals with DD (Carruth et al., 2010). Observations in Turkish schools revealed that although teaching safety skills is a part of the program for children with DD, they are either not taken as teaching objectives by the teachers or these skills are trying to be taught without practices in the class. For individuals with DD, safety skills are as important as motor, communication, academic and social skills. Hence, it is crucial for these students to teach safety skills as a part of their IEPs (Collins et al., 1991). Besides, including targets of safety skills into their IEPs and teaching these skills to children with DD in the early years will help these children be aware of safe and unsafe situations and taking care of themselves during these situations (Timko & Sainato).

Basic first-aid skills are included in the home safety skills. First-aid skills can be conducted for cuts, abrasions, minor burns, minor wounds, insect bites, choking, sun burns, putting unfamiliar things into the nose or ear, fractures or dislocations, etc. (Demir, Bingöl, & Karagöz, 2005). Basic first-aid skills are one of the community survival skills (Christensen, Marchand-Martella, Martella, Fiechtl, & Christensen, 1993; Collins et al., 1991).

Since primary school students are the ones who face the most injuries and accidents both in their school and daily lives, teaching safety skills and especially first-aid skills are very essential for this age group of children with DD (Christensen et al., 1993; Mechling, 2008).

When the literature is reviewed, it can be seen that research studies regarding teaching basic first-aid skills to individuals with DD were conducted between the years of 1989 and 1999. In the literature, communicating an emergency, applying a plastic bandage, taking care of minor injuries, first-aid for choking were taught to three children with intellectual disabilities with ages of 16-17 years (Spooner, Stem, & Test, 1989), teaching first-aids skills for minor wounds, minor burns, abrasions to children with emotional and behavioral disorders with ages of 7-11 years (Marchand-Martella & Martella, 1990), teaching first aid skills for cuts, burns, and insect bites to individuals with intellectual disabilities with ages of 17-21 years (Gast & Winterling, 1992), and using two teaching siblings for teaching first-aid skills for minor burns, abrasions and severe cuts to children with intellectual disabilities of 7-11 years of ages (Marchand-Martella et a., 1992) can be reviewed. Christensen et al. (1993) and Timko and Sainato (1999) taught preschool children to seek adult assistance in response to simulated injuries. In the literature, it can be seen that basic first-aid skills were taught via "training packages" consisting different teaching practices through simulation conditions (Christensen et al., 1993; Marchand-Martella et al.) or small group instruction (Gast & Winterling; Timko & Sainato). These studies revealed that individuals with DD could learn basic first-aid skills and use them whenever needed (Christensen et al., 1993; Gast & Winterling; Marchand-Martella & Martella; Marchand-Martella et al.; Spooner et al.).

Teaching first-aid skills to individuals with DD are being limited due to some problems. These problems can be grouped into two groups: Problems related with the skills and problems related with the method, techniques, and strategies being used. Problems related with the skills can be described as the limitations about (i) dangerous situations do not happen during instruction sessions naturally, (ii) dangerous situations do not occur the same as the previous one in each session, (iii) it is not ethical to provide natural settings in order to teach these skills, and (iv) it is not possible to set up natural teaching settings in order to conduct teaching sessions through natural opportunities (Christensen, Lignugaris-Kraft, & Fiechtl, 1996; Mechling, 2008). Problems related with the method, techniques, and strategies being used can be defined as using verbal and visual teaching, modeling, rehearsing, praising, and providing feedback in the research studies conducted with individuals with DD (Bevil & Gast, 1998; Miltenberger & Olsen, 1996). Matson (1980) and Peterson (1984) found that, if role playing is not included into the teaching procedure, individuals with DD do not learn the target behaviors properly. Besides, it is known that individuals with DD have limitations in learning role playing skills which requires pretend play skills (Mechling). Depending on all these issues mentioned, it is recommended to use video modeling for teaching first-aid skills to individuals with DD.

Video modeling is requires the individual watch the target behavior through video and repeating the target behavior himself (Delano, 2007; Nikopoulos & Keenan, 2006). In the literature, it is shown that children with autism direct their attention to visual stimuli more than verbal stimuli in many research studies (Dawson, Osterling, Meltzoff, & Kuhl, 2000; O'Riordan, 2004; Shipley-Benamou, Lutzker, & Taubman, 2002). Besides it is emphasized that there are many benefits of using video modeling in teaching chained skills to children with autism. It can also be said for the first-aid skills which is also a chained skill (Charlop-Christy, Le, & Freeman, 2000; Christensen et al., 1996; McCoy & Hermansen, 2007; Mechling, 2008).

Depending all the mentioned issues, the needs for this study can be grouped as follows: (i) children with autism need to be taught awareness of dangerous situations, and applying basic first-aid skills (Mazzucchelli, 2001; Mechling, 2008), (ii) it is known that teaching programs of these individuals should include basic first-aid skills, and also it is shown in the literature that teachers either do not put this subject into their programs or they do not teach these skills in practice (Carruth et al., 2010), (iii) it is also known that research studies were conducted on this topic for 10 years between 1989-1999, but since then there is not any systematic studies (Christensen et al., 1993; Gast & Winterling, 1992; Marchand-Martella & Martella, 1990; Marchand-Martella et al., 1992; Spooner et al., 1989; Timko & Sainato, 1999), and (iv) it is recommended in the studies to use pretend play skills and role playing in teaching skills to children with DD regarding their lack of understanding the process (Matson, 1980; Peterson, 1984).

Moving from the needs mentioned above, the purpose of the present study was determined as examining the effects of "first-aid skills training package" which consists of "reading a story, forming a simulation situation related with the target behavior and watching the video about the simulation" on teaching basic first-aid skills to children with autism. Following research questions were addressed moving from this purpose: (i) Is "first-aid skills training package" effective on teaching basic firstaid skills (e.g. cuts, abrasion, and minor burns) to children with autism?, (ii) If the children with autism learn the target skills, can they maintain these skills two, four, and six weeks after the completion of training? (iii) Can the children generalize the target skills across different situations (different part of their or the researcher's body) and different materials? (iv) Can the generalized situations be generalized after the training completed?, and (v)Does the performance of the children with autism before training differ from their siblings with regular development on the target behaviors?

Method

Participants

Participants of the study were three children with autism who were enrolled in primary schools. Besides, a child who modeled for the video modeling sessions, the author as the trainer, and an observer for collecting the reliability data took part in the study.

Subjects: Subjects of the study were three children with autism who were enrolled in primary schools as inclusion students (Tuna and Batu 3rd grade,

Kaan 1st grade). Subjects' ages were 7-9 years. All of them were boys. They all were aware of the situations which required first-aid interventions, but they did not know how to do this.

Prerequisite skills for the subjects to take part in the study were; (i) paying attention to visual and verbal stimuli (e.g. listening to story), (ii) watching the video for at least five minutes, (iii) giving permission for applying a plastic bandage, marking with pen and other dying materials on his body, etc. After the trainer assessed the children the prerequisite skills, she asked questions to the subjects in order to see their awareness of injuries (e.g. "What would you do if you cut your hand?"). Children responded with the same answer for all these questions as "I would apply a plastic bandage." Hence, it is decided that the children were aware of the situation but they did not know what to do in this situation. Besides, regarding parents' opinions about the need for their children to learn the basic first-aid skills due to their interest for helping their mothers in the kitchen and also being in the regular school and other community environments, to teach the target behaviors mentioned above were decided to be taught.

Sibling Model: Sibling model was a nine year boy who was attending to the third grade of a primary school. Sibling model knew the target behaviors of the study. Before the study, trainer told the important points of modeling such as which steps of skills would be conducted in which sequence, how to stand and behave during the video recording, etc.

Trainer: All experimental sessions were conducted by the researcher. The trainer held undergraduate and graduate degrees in special education. Also she is being teaching undergraduate and graduate courses in the department of special education. The trainer has experience in working with children with DD.

Observer: Reliability data regarding the dependent and independent variables of the study were collected by the researcher and a professional in special education as an observer. The observer also held undergraduate and graduate degrees in special education. Also she is being teaching undergraduate and graduate courses in the department of special education. The observer has experience in working with children with DD.

Setting

The video clips of the study were recorded in the

unit for children with DD where the researcher works. The sessions of the study were conducted in the houses of the participant children.

Materials

Following materials were used during the study: Video clips, a laptop for watching the clips, a handy cam, a tripod, short stories, materials for teaching and generalizing the target skills, data collection forms, and pencil.

Dependent and Independent Variables

Dependent variable of the study was to learn the first-aid skills to be conducted after the accidents (cuts, abrasions, minor burns) at home. Skill analyses were prepared by the researcher. The steps of the analyses were controlled by an emergency doctor and the usability of the steps regarding the children with DD was controlled by a special education professionals.

Independent variable of the study was the "first-aid skills training package" which consists of "reading a story, forming a simulation situation related with the target behavior and watching the video about the simulation". The researcher wrote simple and short stories creating a situation for telling the need for the target behavior. Afterwards, video clips were prepared using a sibling model for each target behavior. Professional opinions were gathered about the stories and video clips.

Possible Subject Responses

Subjects showed three types of responses during all the sessions of the study: correct responses, incorrect responses, and no response. Correct responses were conducting the target behavior correctly within four seconds after the skill direction was provided in a correct sequence as placed in the skill analysis. Correct responses were praised verbally or socially by the researcher. Incorrect responses were either not starting the target behavior within four seconds after the behavior direction was provided or starting to conduct the behavior within four seconds but not completing it in the target time, or starting to conduct a wrong step of the analysis within four seconds. No response was showing any response for the skill direction. In the instructional sessions when the subjects showed incorrect responses or no response, the trainer provided feedback to the subject about the correct style of the

target behavior and repeated the skill direction. In the baseline probe sessions, maintenance, and generalization sessions incorrect responses were ignored by the researcher. The correct, incorrect and no responses of the subjects were recorded on the data collection forms.

Experimental Design

In the study multiple probe design with probe trials across behaviors was used and replicated across subjects. Experimental control is demonstrated when the subject showed correct responses in the taught target behavior did not show correct responses in the target behaviors which were not taught yet and when this effect was seen in the other target behaviors sequentially (Tekin-İftar & Kırca-ali-İftar, 2006).

General Procedure

Experimental procedure was consisted of baseline, instructional, maintenance, and generalization sessions. All the sessions were conducted in a 1:1 format and recorded through a handy cam. Four sessions a week were conducted with each subject and one session in every training day was conducted.

Baseline Probe Sessions: Single opportunity method was used in order to collect the baseline data. One session was conducted every day for three consecutive days. Correct responses were praised by verbal and social reinforcers and incorrect responses were ignored by the researcher. With all subjects during the first baseline session related story was read to the subjects. In the other baseline sessions, sessions were started with the simulation situation. Afterwards the skill direction was provided and the responses of the subjects were recorded.

Baseline sessions were conducted before starting to teach the first target behavior until three stable data were collected for three sessions consecutively. For the skills which were not started to be taught yet, intermittent baseline sessions were conducted. After the correct responses of each subject reached 100% accuracy in the first target behavior, baseline sessions were conducted for the second target behavior until three stable data were collected consecutively. Daily probe sessions were conducted prior to each training session in order to assess the level of learning in the subjects.

Instructional Sessions: During the instructional sessions, total task format was conducted. Instruc-

tion of each target behavior was continued until the skill was performed with 100% accuracy for three consecutive sessions. After the daily probe sessions a short break was given for preparing the materials for the instructional session and afterwards instructional session was conducted by using the "First-Aid Skills Training Package".

During the instructional sessions the researcher read the story to the subject. Afterwards, the video clip was provided to the subject related with the target behavior. After watching the video clip a simulation situation was prepared regarding the video clip. The subject was given the skill direction for conducting the first-aid skill as he watched on the video clip. Responses of the subjects were recorded on the data collection forms.

Maintenance and Generalization Sessions: Maintenance probe sessions were conducted two, four, and six weeks after the criterion was met. During the maintenance sessions reinforcers were thinned. FR9 and FR13 reinforcement schedule was used. During the generalization sessions, multiple exemplars were used. Regarding this purpose, different sets of material were prepared with various materials in each set (Set 1 and Set 2). In order to assess the acquisition of generalization, subject was asked to conduct the target first-aid skill on his own body (Set 1) and on the researcher's body (Set 2). If the subject cannot display the target skill in the generalization session, generalization instruction sessions were planned. FR9 and FR13 reinforcement schedule was used with verbal and social reinforcers when the subjects performed correctly during all the session.

Social Validity

Social validity which examines the importance of the behavior changes and social acceptability of the behavior is generally assessed by subjective assessments and social comparison. Social comparison requires the comparison of the subject with the siblings with regular development. If the performance of the subject is in the norm interval, the instruction is thought to be successful (Kennedy, 2005; Tekin-İftar & Kırcaali-İftar, 2006). In this study, social comparison was used. In social comparison analysis, the individuals that will take part in the comparison grouped can be decided by asking the opinions of their parents, teachers or professionals and through observations (Vuran & Sönmez, 2008). In the present study the comparison group was determined by the opinions of parents and observations. The comparison group was consisted of 10 children from the first grades and 10 children from the third grades of five different primary schools. During social comparison, the researcher followed the routine of the probe sessions of the study with the comparison group in a 1:1 format. During these sessions, performance of the comparison group was recorded and the percentage of their correct responses was analyzed. The mean of these percentages was considered to be the percentage of socially appropriate behavior for the first and third grade students. The mean percentage gathered through this study was determined as the success development regarding the target behaviors of the subjects of the study.

Reliability

Reliability (inter-observer agreement and treatment integrity) data were collected at least 20% of all the sessions conducted in the study. The formula of [(observed teacher behaviors/planned teacher behavior) X 100] was used to analyze treatment integrity (Tekin-İftar & Kırcaali-İftar, 2006). During all the sessions, the least percentage of reliability was 92% (range, %89 - %100) and the most percentage of reliability was 100% for inter-observer reliability. Treatment integrity data were analyzed as 100% reliable for all the steps as they were initially planned.

Results

When the results of the study were examined, it can be seen that Tuna performed with 0% accuracy for applying first-aid skills to minor cuts, 12% accuracy for applying first-aid skills to abrasions, and 17% accuracy for applying first-aid skills to minor burns whereas he acquired all the target behaviors at the end of the instructional sessions with 100% accuracy. The results also showed that he could maintain and generalize his target behaviors successfully. Batu performed with 0% accuracy for applying first-aid skills to minor cuts, 14% accuracy for applying first-aid skills to abrasions, and 0% accuracy for applying first-aid skills to minor burns whereas he also acquired all the target behaviors at the end of the instructional sessions with 100% accuracy. The results also showed that Batu could maintain and generalize his target behaviors successfully. Kaan performed with 0% accuracy for applying first-aid skills to minor cuts, 6% accuracy for applying first-aid skills to abrasions, and 0% accuracy for applying first-aid skills to minor burns. Kaan also acquired all the target behaviors at the end of the instructional sessions with 100% accuracy. The results showed that Kaan could also maintain and generalize his target behaviors successfully.

Social validity data were collected from 20 children with regular development. The mean percentage of the comparison group regarding each target skill was considered to be the socially appropriate behavior percentage for the first graders and third graders in the primary schools. The mean percentage of first graders for applying first-aid skills to minor cuts was 80% (range, 78-100%), for applying firstaid skills to abrasions was 92% (range, 88-100%), and for applying first-aid skills to minor burns was 78% (range, 76-100%). The mean percentage of third graders for applying first-aid skills to minor cuts was 88% (range, 86-100%), for applying firstaid skills to abrasions was 95% (range, 92-100%), and for applying first-aid skills to minor burns was 86% (range, 84-100%).

Discussion

Results of the study revealed that the "first-aid skills training package" which consists of "reading a story, forming a simulation situation related with the target behavior and watching the video about the simulation" was found to be effective in teaching basic first-aid skills to children with autism. The results of the present study are consistent with the results of the studies in the literature (Christensen et al., 1993; Gast & Winterling, 1992; Marchand-Martella & Martella, 1990; Marchand-Martella et al., 1992; Spooner et al., 1989). It is thought that the study will extend the literature by generalizing the results across subjects with a different type of disability.

When the literature was reviewed it was found that the accidents may happen at home or in the other settings that children take part. Also some minor injuries may happen to the person himself or to other people around him. Therefore it is very important to teach basic first-aid skills to individuals with DD to apply for himself or to others (Marchand-Martelle & Martella, 1990; Marchand-Martelle et al., 1992). The subjects of the present study acquired the target skills and learned how to apply basic first-aid skills to themselves and to the researcher. This result of the study seems to be consistent with other studies in the literature (Marchand-Martelle & Martella; Marchand-Martelle et al., 1992; Spooner et al., 1989) and also extends the literature regarding the generalization effect.

One of the strengths of the present study can be mentioned as minimizing the limitations which would occur because of the skill (Christensen et al., 1996; Mechling, 2008) itself or because of the methods, techniques, and strategies (Matson, 1980; Mechling; Peterson, 1984). There are many research studies which show the effectiveness of video modeling in teaching chained skills (Akmanoğlu & Tekin-İftar, 2011; Bidwell & Rehfeldt, 2004; D'Ateno, Mangiapanello, & Taylor, 2003; Değirmenci, 2010; Ergenekon, Tekin-İftar, Kapan, & Akmanoğlu, 2010; Halisküçük, 2007; Mechling, Gast, & Gustafson, 2009; Norman, Collins, & Schuster, 2001; Rehfeldt, Dahman, Young, Cherry, & Davis, 2003; Shipley-Benamou et al., 2002). The study also makes a contribution to the literature about teaching chained skills regarding video modeling which is an alternative way of teaching first-aid skills and also regarding the maintenance and generalization effect of the study.

In the literature about video modeling, models were either peers or adults. In the present study peer model was used. Owen-Deschryver, Carr, Cale, and Blakeley-Smith (2008) mentioned that using peer models could decrease the problems about generalization for the children with autism. In the literature, peer models were used for teaching play skills, social skills, role playing, social interaction skills, etc. (Bidwell & Rehfeldt, 2004; Marcus & Wilder, 2009; Nikopoulos & Keenan, 2007; Reagon, Higbee, & Endicott, 2006; Simpson, Langone, & Ayres, 2004). The present study also extends the literature in this point of view.

In the literature, although there are research studies which show the effectiveness of various teaching methods and techniques in teaching chained skills to individuals with DD (Bidwell & Rehfeldt, 2004; Charlop-Christy et al., 2000; Rehfeldt et al., 2003; Shipley-Benamou et al., 2002), there seems to be few studies on teaching first-aid skills to individuals with DD (Christensen et al., 1993; Gast & Winterling, 1992; Marchand-Martella & Martella, 1990; Marchand-Martella et al., 1992; Spooner et al., 1989). It can also be said that the present study is important for showing the importance of teaching such a crucial set of skills to individuals with DD because they can be thought as the skills which increase the living quality of the child himself and his family (Collins et al., 1991). The present study will extend the literature by applying the "first-aid skills training package" with children with DD and help the practitioners with the

developed teaching materials which were used to teach the target skills.

The social validity results of the study were also very positive regarding the subjects and the parents and teachers of the subjects. The social comparison results of the study were presented in the results section. The opinions of the parents and teachers of the subjects can be mentioned here. When the researcher met parents of Batu and teacher of Tuna, they mentioned that they both had the chance to apply first-aid skills in different environments and they both managed to do these skills independently. Marchland-Martelle and Martella (1990) also mentioned that after the study they conducted parents of the subjects of their study reported that their children applied the target skills in real environments. The results of the two studies are consistent in that sense.

Depending on the results of the present study, it can be recommended to the teachers, practitioners and parents to use training packages which would include video modeling to teach new skills to children with autism. It can also be recommended to conduct similar studies with children with different ages and levels of autism or make some changes in the training package and examine the effectiveness of the package.

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